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The problem of maintenance service, by
Lt Col S. W. Gooch. CGSC. 1947-48.

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COMMAND AND GENERAL STAFF COLLEGE
SCHOOL OF LOGISTICS

L-4021

DIRECTIVE FOR ANALYTICAL STUDY

28 October 1947
(Date)

6-6
Subject No.

SUBJECT: The Problem of Maintenance Service.

PURPOSE: To determine the feasibility or desirability of creating a single maintenance service or the consolidation of two or three existing maintenance services for the increased efficiency of operations.

SCOPE :

a. Review the present system of separate maintenance responsibility of each technical service for equipment that it procures.

b. Show the duplications of maintenance facilities involved and dual responsibilities for maintenance of some units (such as truck mounted air compressor for which the ordnance maintains chasis and engineers the compressor).

c. Balance the advantages and disadvantages of the present maintenance system with those of a single maintenance service, or the consolidation of some of the present maintenance services.

d. Make specific recommendations for the increased efficiency in maintenance operations.

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C & G S College,
Ft. Leavenworth, Kansas
9 May 1948.

SUBJECT: The Problem of Equipment Maintenance Service.

1. PROBLEM. -To determine the feasibility or desirability of creating a single equipment maintenance service or the consolidation of two or more existing maintenance services for increased efficiency of operations.

2. DISCUSSION.

a. Equipment maintenance responsibilities of specific items are assigned to each technical service by the Department of the Army. Generally all items of one commodity group are assigned to one technical service for supply and maintenance. However, in some cases two or more technical services are charged with maintenance responsibility for identical or similiar items, thereby resulting in an unnecessary duplication of equipment maintenance facilities. (Annex 1).

b. Equipment maintenance policies and procedures developed during the past five years have eliminated to a great extent the deficiencies that prevailed during the early part of World War 11. (Annex 2).

c. The close relationships existing between supply and maintenance make for increased efficiency when these two responsibilities for an item are assigned to the same technical service. Likewise, the maintenance responsibility for all items of one commodity group should be assigned to one technical service, thereby eliminating unnecessary duplication of maintenance facilities and equipment. The technical service selected should be the one possessing the technical know-how, trained technicians, and the necessary maintenance facilities and equipment.

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Assignment of maintenance responsibility for a new item must be made during its design to permit timely procurement and distribution of spare parts, special tools, training of maintenance technicians, and expansion of facilities. The advantages of creating a single equipment maintenance service of the consolidation of two or more existing maintenance services for increased efficiency of operations are outweighed by their disadvantages. (Annex 3).

3. ACTION RECOMMENDED.

a. That no major change be made in the present system of separate maintenance responsibility of each technical service for items that it supplies.

b. That a review of presently assigned maintenance responsibilities for all items be made, and in those cases where identical or like items are charged to two or more technical services for maintenance, that a reassignment of equipment maintenance responsibility be made based on the following principles:

(1) Military efficiency.

(2) Economy of manpower, maintenance facilities and maintenance equipment.

c. That the assignment of maintenance responsibility of each new item be based on the above principles, and further, that the assignment be made during its design stage to permit timely procurement and distribution of spare parts, special tools, training of maintenance technicians, and expansion of facilities.

Stacy W. Gooch

STACY W. GOOCH,
Lt. Col., FA
Student, School of Logistics

ANNEX I

EQUIPMENT MAINTENANCE RESPONSIBILITY

I. Chiefs of technical services are assigned primary maintenance responsibility for specific items by the Department of the Army. As a general rule all responsibilities for an item are assigned to one technical service. These responsibilities include: design, development, specifications, requirements, procurement, engineering test, storage and issue, field and base maintenance, and procurement, storage and issue of spare parts. Deviations from the above will be discussed later. Similiar or related items fall logically into one commodity group, and the maintenance responsibility for all items of a commodity group is assigned to one technical service based on that service's principal functions as outlined below.

a. Chemical Corps

(I) Responsible for supply and maintenance of chemical items of common usage, such as all chemical equipment of both offensive and defensive nature (except the 4.2 inch mortar which is the responsibility of Ordnance).

(2) Chemical equipment includes: flame throwers; mechanical smoke generators and airplane smoke tanks; and gas masks, goggles, collective protectors, decontaminating apparatus, and gas testing equipment.

b. Corps of Engineers.

(I) Responsible for supply and maintenance of engineer construction equipment, assault boats and certain other craft, and of equipment required for fire fighting, utilities, forestry, survey and map production, and illumination.

(2) Engineer equipment includes: bull dozers, low speed tractors, graders, rollers, dump trucks, power saws, floating and fixed bridges, cranes and dredges, pipe line equipment including storage tanks; assault boats and certain other craft; fire trucks, fire extinguishers and pumps; electric

generators, fixed refrigeration units, water purification plants; transits and other survey equipment, and map production equipment; and anti aircraft search lights, barrage balloons and infra red sighting devices.

c. Medical Department

(I) Responsible for supply and maintenance of medical, dental, and veterinary equipment.

(2) Equipment includes surgical instruments, machines, laboratory and field medical equipment.

d. Ordnance Department

(I) Responsible for supply and maintenance of combat, general purpose, and some special purpose vehicles; weapons; and fire control instruments.

(2) Ordnance equipment includes: armored, track and half-track vehicles; motorcycles, automobiles, trucks, and trailers; high speed tractors, amphibian trucks, water tank trailer; guns, howitzers, mortors, small arms; and sighting devices, aiming circles, field glasses, and other fire control instruments.

e. Quartermaster Corps

(I) Responsible for supply and maintenance of individual and organizational equipment, equipment of standard manufacture, and equipment common to two or more arms or services (excluding motor vehicles and special or technical items procured or issued exclusively by other services).

(2) Equipment includes: clothing; office furniture and machines; gasoline dispensing equipment; laundry and bath equipment; mess and bakery equipment; musical instruments; and materials handling equipment.

f. Signal Corps

(I) Responsible for supply and maintenance of all items of signal equipment used in common by all troops (excluding items peculiar to other arms and services).

(2) Equipment includes: radar, radio, tele-

vision, teletype, and telephone; projectors and photographic equipment; meteorological and sound and flash ranging equipment; and cryptographic equipment.

g. Transportation Corps

(1) Responsible for supply and maintenance of floating equipment (except that assigned to Corps of Engineers), military railway equipment, and some pier operating equipment.

(2) Equipment includes: vessels and harbor craft, floating cranes and barges; electric and steam driven locomotives, railway cars, carriages of railway artillery, transmission units; and locomotive cranes.

2. a. To carry out the primary maintenance responsibility for assigned items, each technical service chief is provided with maintenance facilities, equipment, and technical service personnel to perform base maintenance.

b. The responsibility for field maintenance is charged to major and subordinate commanders. Facilities, equipment, spare parts, and technical service personnel are provided accordingly.

c. The responsibility for organizational maintenance is charged to the using organization. Facilities, equipment, spare parts, and operators, organization mechanics, and repairmen are provided accordingly.

3. In addition, as staff officers chiefs of technical services are responsible for technical supervision of maintenance of items for which they have been assigned primary maintenance responsibility by the Department of the Army. Technical supervision of maintenance encompasses the promulgation of technical maintenance doctrines covering all phases and/or echelons of maintenance and the development of inspection procedures for determining that those doctrines are carried out. It also includes the establishment of standards of serviceability and the issuance of catalogs, manuals and instructions covering

types and use of tools and equipment, and prescribing shop methods and layouts necessary to achieve these established standards. Technical supervision does not include operating control of a maintenance facility which embraces organization management, administration and operation in accordance with prescribed procedures, including the formulation of working procedures other than those specified by higher headquarters in connection with technical supervision, all of which are prerogatives of command normally exercised by an arm or service, unit or establishment responsible for the mission of the facility.

4. a. An analysis of assigned maintenance responsibilities discussed above will indicate that two or more technical services have dual responsibilities for maintenance of some units with a resultant duplication of facilities. For example, Ordnance and Engineer equipment include gasoline driven tractors and vehicles; Ordnance, Engineer and Signal Corps equipment include fractional horsepower motors and generators; and Transportation, Engineer, and Quartermaster equipment includes materials handling equipment.

b. Tabulated below are some examples of special purpose and special equipment vehicles. The technical service charged with the responsibility for procurement, field and base maintenance, and storage and issue of spare parts are listed opposite each item under the appropriate column heading. Of special note is the assignment for field and base maintenance responsibilities for the chasis of each vehicle. In some cases the Engineers are responsible. This means a duplication of facilities for base maintenance, especially, for gasoline driven truck engines. Another interesting point is that the service charged with responsibility for maintenance is also charged with storage and issue of spare parts.

ITEM	PROCUREMENT			FIELD and BASE MAINTENANCE; STORAGE and ISSUE of SPARE PARTS		
	Chasis	Body	Mounted Equip.	Chasis	Body	Mounted Equip.
CRANE, shovel, power unit truck mounted, pneumatic tired, 2 engine-drive, gasoline, 4-8 tons, 3/8 cu yd w/attachments	Ord	Engr	Engr	Ord	Engr	Engr
CRANE, shovel, power unit truck mounted, pneumatic tired, gasoline engine driven, 8-15 tons, w/ attachments	Engr		Engr	Engr		Engr
TRUCK, 2½ ton 6x6 Maintenance and telephone construction, V17/MTQ	Ord	SC co/w Ord	SC	Ord	Ord	Ord
TRUCK, ¾ ton, 4x4, light maintenance and installation, K50-B	Ord	Ord co/w SC	SC	Ord	Ord co/w SC	SC
TRUCK, dump body, 10 cu. yd., 4x2, 2 DT, 157 in. wheel base	Engr	Engr	Engr	Engr	Engr	Engr
TRUCK, fire powered pumper, class 750, 750 GPM, 5 ton 4x2, Special fire truck chasis	Engr	Engr	Engr	Engr	Engr	Engr
TRUCK, fire powered pumper, Class 325, 300-GPM, Overseas type, Ordnance 1½ ton, 4x4 truck chasis	Ord	Engr	Engr	Ord	Engr	Engr

DEVELOPMENT OF EQUIPMENT MAINTENANCE POLICIES AND PROCEDURES

Section I.

ANNEX 2

I. During the first two years of World War II, the maintenance of equipment in the Army was not satisfactory. At the War Department level the organization for maintenance of equipment was inadaquate to cope with the problems at hand. The rapid expansion of the Army, the shortage of all types of equipment, and the excessive amount of disabled equipment on hand made improved maintenance a matter of first urgency.

2. Each technical service had independently expandéd its maintenance activities for its individual needs. Overlapping and confusion soon developed and pointed up the necessity for a plan of maintenance coordinated at War Department level.

3. The Maintenance Division, Army Service Force, was established 8 April 1943. It functioned under the Assistant Chief of Staff for Operations, ASF, until transferred to the Office of the Director of Supply, ASF, on 23 October 1943. The maintenance Division was called upon to develop broad policies, methods and procedures with sufficient latitude to cope with the pressing problems that had been developing over the past two years.

4. The problems facing the maintenance Division included:

a. Spare parts: inadæquate supply, lack of standardization, and improper control.

b. Maintenance facilities: duplication of facilities in some cases, and lack of facilities at strategic locations in other cases.

c. Personnel: inadequate maintenance training programs and insufficient maintenance personnel to operate facilities.

5. To prevent shortages of spare parts the following actions were taken:

a. Fast moving parts for every major item, and parts and assemblies needed for all echelons of maintenance for

every major item were procured concurrently with the major item.

b. Depot stock levels were automatically replenished in accordance with consumption.

c. The practice of storing and issuing spare parts sets was discontinued. This had caused individual item shortages because of absorption in the sets.

d. Inactive items were returned to manufacturers whenever possible.

e. Spare parts lists were prepared; standardization of equipment and interchangeability lists were partially developed.

f. Service commands were required to edit requisitions on depots to correct existing deficiencies in their preparation.

g. Close supervision over distribution was instigated to eliminate shortages in one locality of items that were in excess at others.

6. To correct the situation indicated above regarding maintenance facilities the following actions were taken:

a. Duplication of facilities and resultant inefficiency of operations were eliminated to a great extent by the implementation of a composite shop organizational plan (better known as the "combined shop"). By I February I944 the number of shops operated by the technical services and service commands were reduced by 80.

The mission of the combined shop was to render prompt service to ground and service organizations in the repair, maintenance, and modification of Army equipment, regardless of the technical service to which the equipment was assigned, with a minimum of manpower and equipment.

Organization and technique, maintenance procedures, functions, records and reports were standardized, simplified, and published in Army Service Forces Manual M4I2.

This plan provided for unification of command, centralized control, supply through a central point and consolidation of administrative activities. The Deputy Director for Maintenance commanded the combined maintenance shop and was responsible to the Director of Supply and Service of the appropriate Service Command or Post for its direction and complete supervision of its activities.

Two outstanding weaknesses of this plan were:

(I) The supply of spare parts were drawn from the various technical services' supply points. This divided the supply and maintenance responsibilities between the technical services and the maintenance service.

(2) The appropriate technical services were charged with the final approval of completed repair jobs. This divided the quality control responsibility and the quantity of production responsibility between the technical services concerned and the maintenance service, respectively.

War Department Circular 204 was published 7 July I945, permitting the service commands to discontinue the combined shop plan if they so desired. Only the Third Service Command continued to operate combined shops.

b. Base maintenance facilities were expanded and reduced as the situation dictated. For a period of about two years the responsibility for automotive base maintenance was transferred from the Chief of Ordnance to the service commands. The establishment, consolidation, expansion and subsequent reduction of base maintenance facilities were coordinated by the Mai ntenance Division.

7. To correct the training deficiencies the following actions were taken:

a. An extensive educational program stressing preventive maintenance was undertaken. Every individual was made conscious of the why, how and urgency for performing preventive main-

tenance. The mediums used were: posters, stickers and films; literature such as Army Motors, Bulletins, Firepower, Journals (Infantry, Artillery, etc.); authorization for Drivers and Mechanics Awards; lubrication charts; technical manuals such as Basic Maintenance Manual and Operator's Manuals; and the development and issue of devices such as the rifle bore cleaner container for convenient use in preventive maintenance.

b. Field and Base maintenance standards were raised by the publication of field maintenance manuals and the Ordnance Base Shop Data Book. Also civilian experts in automotive maintenance were hired and assigned to combat organizations. These experts remained with the troops until units were ready for overseas movement.

c. The Maintenance Division coordinated these maintenance activities to insure that complete coverage of subject matter and all possible standardization were accomplished. The policies, methods, and procedures developed and published from time to time were consolidated and published in TM 37-250 "Basic Maintenance Manual". The remainder of this discussion is devoted to those policies, procedures and practices.

Section II

8. Responsibility for maintenance

Every member of the armed forces has a definite maintenance responsibility. Personnel operating or wearing equipment, organization mechanics and repairmen, technical maintenance experts, and commanders of all echelons must concientiously strive to prevent the deterioration of and insure the efficiency and effectiveness of the armed forces equipment.

9. Maintenance System

a. Efficient maintenance dictates that the various maintenance operations must be performed on each item be allocated to specific echelons of command in accordance with pre-established plans and policies.

b. Where and by whom any given operation is performed is governed by the tactical situation, nature of repairs, time available, number and skill of maintenance personnel, and availability of facilities, equipment, and spare parts.

c. The system requires that all organizations be provided with sufficient adequately trained personnel and things to accomplish their prescribed maintenance mission. No maintenance level will perform the work of a higher level at the expense of its own assigned functions.

IO. Catagories of maintenance activities.

a. Organizational maintenance consists of maintenance performed by organizations on their own equipment. It includes inspection, servicing, adjusting, minor repairs, and replacement of minor parts.

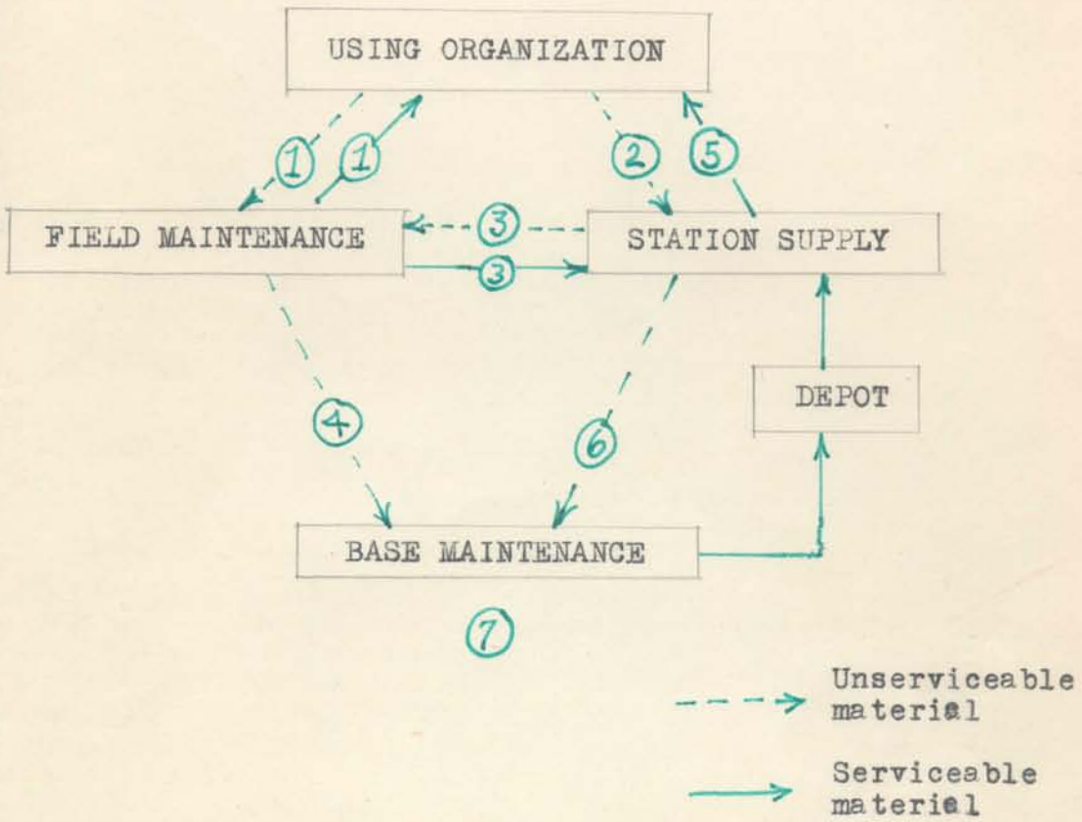
b. Field maintenance consists of maintenance performed by mobile or semi-mobile technical service organizations in support of organizational maintenance, exclusive of rebuild. It includes inspection and repairs involving more complicated adjustments and replacement of major parts and assemblies. Repaired items are returned to using organization, station stocks, or replacement pools. Field maintenance is the responsibility of major commands.

c. Base maintenance consists of maintenance performed by technical service organizations in fixed installation. It includes the complete rebuilding of equipment, assemblies, parts, accessories, tools and test equipment, and complete manufacture of assemblies and items, when necessary. Repaired or manufactured items are sent to depot stock. Base maintenance also supports field maintenance through acceptance and accomplishment of work beyond the capacity of field maintenance. Base maintenance is the responsibility of the Chiefs of Technical Services.

d. Figures I and 2 indicate the flow of unserviceable materiel and spare parts respectively.

MAINTENANCE FLOW CHART

Unserviceable Equipment

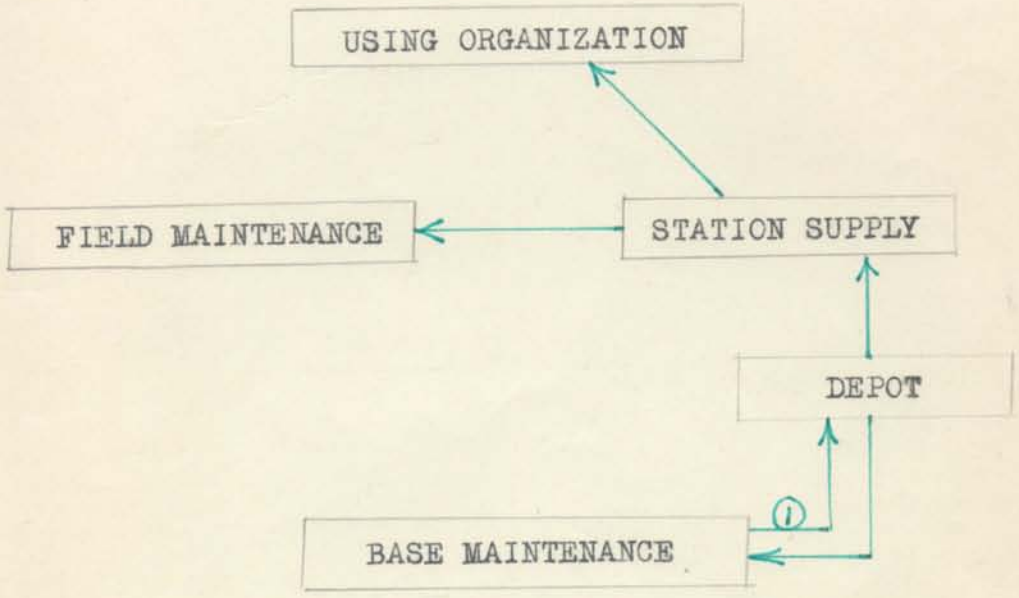


1. Repair for return to user
2. Excess unserviceable material
3. Repair for return to local stock
4. Beyond field maintenance scope
5. Replacement of authorized material evacuated to Base maintenance
6. For repair or rebuild for depot stock (unserviceable Station excess)
7. Base maintenance may repair items for return to user

Figure I

MAINTENANCE FLOW CHART

Spare Parts



(1) Repaired or manufactured parts and assemblies

Note: Supply of spare parts is made on an exchange basis with using organization. In combat zone field maintenance organization is source of supply for using organization.

Figure 2

II. Utilization of maintenance facilities.

Appropriate commanders and chiefs of technical services will effect the required coordination to eliminate duplication of maintenance facilities, activities, and personnel. Facilities will be so located and operated as to promote the most rapid and effective maintenance possible. In instances where items of one technical service do not exist in sufficient number to warrant separate facilities and/or assignment of special mechanics, other technical services will furnish maintenance support.

I2. Maintenance supply of spare parts and tools.

a. The authorized allowances and initial stockage of spare parts and tools are prescribed in the various supply publications for organizations in accordance with their authorized maintenance mission.

b. Standardization of spare parts and tools, complete and accurate cataloging, and timely, accurate and comprehensive requisitioning are prerequisite requirements of good maintenance operations. Figure 2 indicates the flow of spare parts.

I3. Procedures and practices.

a. Protection, care and preservation of supplies in storage and in transit are responsibilities of command delegated to storage officers. Maintenance officers must furnish technical assistance in these matters when requested by storage officers.

b. An Operator's Technical Manual or Lubrication Order pertaining to an item of equipment, where published, will be listed as an accessory for issue with the item. Each issuing agency is responsible for concurrent issue of these publications with the respective item of equipment.

c. Preventive maintenance is a command responsibility. All personnel must be educated in the how, why, and the urgency of preventive maintenance, and alloted sufficient time for proper application. Appropriate action must be taken against individuals guilty of abuse of equipment.

d. Evacuation of unserviceable materiel is indicated in Figure I. In general, materiel which is beyond the maintenance scope of any organization, or which cannot be repaired within time available, is evacuated to the next higher maintenance organization, unless authorized for local disposition.

I4. Modification of Materiel.

a. Modification of materiel may become necessary to meet revised specifications or correct defects.

b. When an item appears to be unsatisfactory in design or materiel, an Unsatisfactory Equipment Report will be submitted. Reports received from the field will be analyzed and if a modification is justified, the Chief of technical service concerned will coordinate the publication and distribution of a Modification Work Order with the production of things required for the modification.

c. Appropriate maintenance organizations are responsible for modification of materiel in compliance with the authorized Modification Work Order and such other directives as may be published pertinent thereto.

d. Materiel requiring modification may be replaced with modified materiel when replacement is more expeditious, unless prohibited by the terms of the Modification Work Order, or the stock position.

I5. Salvage and Reclamation.

a. Salvage consists of materiel which can be used for its original purpose, converted to some other use, or added to the scrap pile for use as raw material.

b. Combat troops are charged with battle field recovery, which is the removal of salvage from the battle field. The initial movement is usually to designated collection points or maintenance or supply establishments for return to service or repair.

c. Field maintenance organizations are charged with evacuation of salvage from collection points in connection with their own maintenance operations. Appropriate transportation returning to the rear will be utilized to the maximum extent.

d. Collected salvage will be inspected and classified, and based on the supply status and condition of the item, Steps will be taken to-

(I) Restore economically repairable items to serviceable condition at the appropriate field or base maintenance organization.

(2) Evacuate repaired and/or serviceable items to the proper supply establishment.

(3) Evacuate irrepairable but reclaimable items to the proper maintenance organization for reclamation.

(4) Evacuate uneconomically repairable items and scrap to designated depots or other collecting points.

e. Reclamation is the process of restoring salvage, or parts or components thereof, to usefulness by repair, refabrication, or renovation, and returning such items to supply channels.

I. The relationships existing between supply and maintenance are very close indeed. The establishment of a single maintenance service or the consolidation of two or three existing maintenance services would split the responsibility for supply of an item from the responsibility for maintenance of that item. The separation of these responsibilities for supply and maintenance would interrupt at various stages the logical processes involved in the overall mission of furnishing, in good condition, that item to the using organization. The lack of a single chain of command and overall responsibility for the accomplishment of the objective would result in a decrease in the efficiency of operations. Some of these relationships include:

ANNEX 2

a. Maintenance is a source of supply.

(1) Items are repaired for return to the using organization of to depot stocks.

(2) Base maintenance manufactures critically needed items to replinish exhausted depot stocks when no other practical source of procurement exists.

(3) Items modified in accordance with Modification Work Orders are returned to the using organization or to depot stocks.

(4) Unserviceable excess items are repaired for return to depot stocks.

(5) Evacuation, salvage, and reclamation performed by maintenance organizations increases depot stocks, thereby reducing requirements.

(6) Distribution of spare parts to using units in the combat zone is accomplished by field maintenance units, supply being on an "exchange of item" basis.

b. Priorities of repair are established in accordance with overall supply demands.

(I) Items in short supply are placed on a high priority.

(2) Items in long supply are placed on a relatively low priority

(3) Maintenance work loads are shifted among shops to prevent excessive back logs in order that more urgently needed items may be returned to supply channels.

c. Supply supports maintenance.

(I) An adequate supply of tools, test equipment, equipment, supplies and parts is essential to the accomplishment of good maintenance service.

(2) In many cases supply installations provide for the administrative support of maintenance units.

(3) Under present conditions, some supply organizations contain maintenance elements, or contemplate the attachment of maintenance teams of the 500 series types. In these cases supply has command and operational supervision over maintenance.

(4) Staff supervision at the Department of the Army level stems from the Supply Group, Logistics Division. Maintenance looks to supply for guidance from the top level down.

(5) Items from using units, that are not in excess to their requirements, that must be repaired in base maintenance shops are replaced by serviceable items from depot stocks.

(6) Good supply discipline lessens the load on maintenance.

d. Maintenance supports supply.

(I) Maintenance must furnish technical assistance to storage officers for care and preservation of items in storage.

(2) Maintenance units assemble and perform initial maintenance service on crated vehicles and the like prior to issue by supply.

(3) Items in depot stocks requiring modification are modified by maintenance organizations in accordance with the Modification Work Orders.

(4) Base maintenance records of items repaired and items to be repaired are important and required Stock Control data.

e. Other related factors are:

(1) Establishment of Serviceability Standards are of concern to both supply and maintenance.

(2) Degree of standardization of assemblies to be used in newly conceived items, thereby affording maximum interchangeability of spare parts.

(3) Establishment of requirements for spare parts for newly developed items.

(4) Combined utilization of technical experts necessary in the field of supply for design, specifications, development, engineering tests, and inspections and in the field of maintenance when the maintenance of the item is of a highly technical nature.

(5) The training of supply and maintenance personnel and units coordinated to the extent that delivery of unserviceable materiel, tools, equipment, spare parts and supplies, to the trained and highly skilled repairman, and providing him with the necessary facilities or place to work , and finally, the distribution of repaired material to combat units, are accomplished.

(6) The control of issue of major items coordinated with maintenance capabilities, that is, sufficiency of spare parts, trained repairmen, and adequacy of maintenance facilities.

2. All of the above factors may be summarized as follows: That the overall mission of supply embraces maintenance, and the two operate best when they function as a team headed up by the appropriate technical services.

3. The creation of a single maintenance service or the

consolidation of two or three existing maintenance services have certain advantages and disadvantages.

a. Some advantages are:

(I) Fewer shops would be needed.

(2) Machinery would be saved.

(3) Standardization of operating methods and procedures would be facilitated.

(4) Provides a single agency,or a fewer number, for using units to deal with for all maintenance.

(5) Shops could be organized on a functional basis.

(6) Fosters interchangeability of parts.

b. Some disadvantages are:

(I) Variation in types of equipment from one commodity group to another would still require the same break down into specialties.

(2) Maintenance service would not be specialized.

(3) Supply and maintenance would not be a team working toward the objective of furnishing items in good repair to using units, or no single agency would be responsible for everything to do with an item from the time of its conception until salvaged as scrap for use as raw material.

c. Discussion

(I) A fewer number of shops will cut down on operating overhead; however, the number of additional personnel for the headquarters or staffs required in the creation of a separate service, or a consolidation of some services, would offset this advantage. The creation of this separate service would increase the number of personnel presently used at the top levels.

(2) The saving on machinery would be small. Only a few items of maintenance machinery remain idle under the present system. There are usually sufficient back logs at facilities to keep machinery in full time operation. Although there will be fewer shops, these shops will be larger or have branch

shops under their control. Hence, little saving in machinery will be effected.

(3) A single maintenance service will still have need for specialized repair shops. Consolidation cannot change this need. Only a few of these required specialized shops are listed below:

(a) Radar and related items

(b) Vessels and water craft

(c) General purpose vehicles

(d) Combat vehicles

(e) Fire control instruments

(f) Heavy engineer construction equipment

(g) Weapons

(h) Railway locomotives

(i) X-ray machines and other medical and surgical equipment

(4) Dual responsibilities and duplication of facilities under the present system were discussed in Annex 1.

4. Nonessential duplication must be eliminated. In the determination of essentialness consideration must be given to military efficiency and necessity as well as civilian economy.

a. Factors under military efficiency include:

(1) Supply and maintenance perform as a team in the accomplishment of the overall mission.

(2) Rapid and efficient repair and return to the user or supply channels as appropriate.

(3) Control must be facilitated.

(4) A single agency should be responsible for everything to do with one item.

(5) Early assignment of maintenance responsibility must be made to allow for timely procurement of spare parts, special tools, facilities, and the training of repairmen.

b. Factors considered under economy include:

(I) Utilization of technical experts in the scope of supply for the design and development of an item and in the scope of maintenance when maintenance of the item presents highly technical problems.

(2) Responsibility for maintenance of an item be assigned to that technical service that has in existence facilities, equipment, the know how and the experts necessary to carry out the mission.

(3) All items of a commodity group be assigned the maintenance responsibility of one technical service in order to economize in facilities and personnel.

(4) Only the minimum essential duplication can be candoned.

5. a. The advantages of creating a single maintenance service or the consolidation of two or three existing maintenance services are outweighed by their disadvantages.

b. The factors listed above under military efficiency and economy should be carefully weighed when considering a change in the present assignment of equipment maintenance responsibilities. These factors evolve from maintenance doctrine, policies, and procedures discussed previously. It certainly appears possible to reassign maintenance responsibility for certain items without violating these principles. However, to charge Ordnance with maintenance responsibility for highly technical signal corps equipment mounted on a special purpose vehicle would violate most of the principles. It must be kept in mind also, that such a case as this causes no particular problem under the present system. Seldom will both the vehicle and the mounted equipment be in need of repair at the same time. On the other hand, the repair of Ordnance canvas (truck tops) could be assigned to the Quartermaster.

6. Recommendations

a. That no major change be made in the present system of maintenance.

b. That a review of presently assigned maintenance responsibilities for all items be made, and in those cases where identical or similiar items are charged to two or more technical services for maintenance, that a reassignment of equipment maintenance responsibility be made based on the following principles:

(I) Military efficiency

(2) Economy of manpower, facilities and maintenance equipment.

c. That the assignment of maintenance responsibility of each new item be based on the above principles, and that the assignment be made during its design stage to permit timely procurement and distribution of spare parts, special tools, facilities, and training of repairmen.

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